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| EXAMINER |
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SINCLAIR, DAVID M

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2831

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/568,730 | Applicant(s) CLEMENS ET AL. | |
| | Examiner DAVID M. SINCLAIR | Art Unit 2831 | |

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 9 is/are rejected.
- 7) ☒ Claim(s) 6-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 & 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Patent Abstract of Japan Publication Number 61001060 hereafter referred to as Torahiko.

In regards to claim 1, Torahiko discloses

An organic capacitor having voltage controlled capacitance (purpose), comprising at least the following functional layers a first electrode (14 – constitution), a second electrode (10 – constitution), and an insulator layer (12 – constitution) between the first and second electrodes in direct ohmic contact with the first electrode (see figure); wherein at least one first semiconductor layer (11 – constitution; purpose) is between the first and second electrodes in direct ohmic contact with the second electrode and with the insulator layer (see figure). The limitations “wherein the concentration of free charge carriers in at least said first semiconductor layer is varied in a controlled manner by application of a voltage between said first and second electrodes, the concentration of said charge carriers determining the capacitance of the capacitor, and the

concentration of said free charge carriers in at least said first semiconductor layer is additionally varied in a controlled manner by a frequency of the applied voltage" are inherently met as these limitations are properties of the above structure. When the structure recited in the references is substantially identical to that of the claims, claimed properties are presumed to be inherent.

In regards to claim 2, Torahiko inherently discloses

The limitation "the variation of the concentration of said free charge carriers results in a variation of an effective spacing (a) of the electrodes serving as capacitor plates, and said effective spacing (a) functionally determines the capacitance" is a property of the above structure of claim 1 and is therefore inherently taught. When the structure recited in the references is substantially identical to that of the claims, claimed properties are presumed to be inherent.

In regards to claim 3, Torahiko inherently discloses

The limitation "the variation of the concentration of said free charge carriers results in a variation of an effective plate surface area, and said effective plate surface area functionally determines the capacitance" is a property of the above structure of claim 1 and is therefore inherently taught. When the structure recited in the references is substantially identical to that of the claims, claimed properties are presumed to be inherent.

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In regards to claim 9, Torahiko discloses

An organic capacitor as defined in claim 1 wherein at least one of said functional layers is a layer of an organic substance (12 – constitution).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-5 & 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aratani et al. (5,705,826).

In regards to claim 1,

Aratani '826 disclose an organic FET comprising at least the following functional layers a first electrode (6 & 5 – fig. 5; column 11 – line 14), a second electrode (2

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– fig. 5; column 11 – line 8), and an insulator layer (3 – fig. 5; column 11 – line 10) between the first and second electrodes in direct ohmic contact with the first electrode (see fig. 5), wherein at least one first semiconductor layer (4 – fig. 5; column 11 – line 11) is between the first and second electrodes in direct ohmic contact with the second electrode and with the insulator layer (fig. 5). Aratani '826 fails to teach a capacitor.

The examiner takes Official Notice that it is well known to those skilled in the art that electrically connecting the source and drain of a FET will give a FET based capacitor wherein the drain and source act as a first plate and the gate acts as a second plate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to connect the source and drain of Aratani '826 to obtain a FET based capacitor with a large capacitance density.

The limitations “wherein the concentration of free charge carriers in at least said first semiconductor layer is varied in a controlled manner by application of a voltage between said first and second electrodes, the concentration of said charge carriers determining the capacitance of the capacitor, and the concentration of said free charge carriers in at least said first semiconductor layer is additionally varied in a controlled manner by a frequency of the applied

voltage” are inherently met as these limitations are properties of the above structure. When the structure recited in the references is substantially identical to that of the claims, claimed properties are presumed to be inherent.

In regards to claim 2,

The references as applied above disclose all the limitations of claim 2 except the variation of the concentration of said free charge carriers results in a variation of an effective spacing (a) of the electrodes serving as capacitor plates, and said effective spacing (a) functionally determines the capacitance. However, the limitation “the variation of the concentration of said free charge carriers results in a variation of an effective spacing (a) of the electrodes serving as capacitor plates, and said effective spacing (a) functionally determines the capacitance” is a property of the structure of claim 1 and is therefore inherently taught. When the structure recited in the references is substantially identical to that of the claims, claimed properties are presumed to be inherent.

In regards to claim 3,

The references as applied above disclose all the limitations of claim 2 except the variation of the concentration of said free charge carriers results in a variation of an effective plate surface area, and said effective plate surface area functionally determines the capacitance. However, the limitation “the variation of the concentration of said free charge carriers results in a variation of an effective

plate surface area, and said effective plate surface area functionally determines the capacitance” is a property of the structure of claim 1 and is therefore inherently taught. When the structure recited in the references is substantially identical to that of the claims, claimed properties are presumed to be inherent.

In regards to claim 4,

The references as applied above disclose all the limitations of claim 4 except at least one of said first and second electrodes is a structured electrode. However, Aratani '826 further teaches at least one of said first and second electrodes is a structured electrode (6 & 5 – fig. 5).

In regards to claim 5,

The references as applied above disclose all the limitations of claim 5 except at least one of said first structured electrodes is embedded in said semiconducting layer. However, Aratani '826 further teaches at least one of said first structured electrodes is embedded in said semiconducting layer (fig. 5).

In regards to claim 9,

The references as applied above disclose all the limitations of claim 5 except at least one of said functional layers is a layer of an organic substance. However, Aratani '826 further teaches at least one of said functional layers is a layer of an organic substance (title).

Allowable Subject Matter

6. Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID M. SINCLAIR whose telephone number is (571)270-5068. The examiner can normally be reached on Mon - Thurs. 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diego Gutierrez/
Supervisory Patent Examiner, Art Unit 2831

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/D. M. S./

Examiner, Art Unit 2831